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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,921	10/13/2006	Hiroshi Yoshida	188482/US-465122-00030	6597

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DORSEY & WHITNEY LLP  
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NEW YORK, NY 10177

EXAMINER
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JANAKIRAMAN, NITHYA

ART UNIT	PAPER NUMBER
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2123

MAIL DATE	DELIVERY MODE
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10/05/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

10/599,921

**Applicant(s)**

YOSHIDA ET AL.

**Examiner**

NITHYA JANAKIRAMAN

**Art Unit**

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 9-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____.                                     |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/24/08, 5/22/08, 12/19/06, 10/13/06</u> .                   | 6) <input type="checkbox"/> Other: _____.                         |

### **DETAILED ACTION**

This action is in response to the submission filed on 10/13/2006, which claims priority from application 2004-118201 with priority date 04/13/2004. The preliminary amendment filed 10/13/2006 has been received. Claims 9-16 are presented for examination.

#### ***Information Disclosure Statement***

1. The information disclosure statement filed 11/24/08 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because it contains a reference without a date, and has thus been "lined out". It has been placed in the application file, but the information referred to therein has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

#### ***Specification***

2. The Abstract is objected to for being in excess of 150 words.

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

4. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means"

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and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

5. The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### *Claim Rejections - 35 USC § 101*

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 13-16 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

7. Claims 13-14 recite a "software arrangement" consisting of a series of instructions. Software *per se* is not sufficient to be considered statutory subject matter.

8. Claims 15 and 16 recited "a computer-accessible medium", which is defined in the specification to include transmission media (paragraph [0037]), which is not sufficient to be statutory subject matter.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over “Ultimate Strength and Failure Mechanism of Resistance Spot Weld Subjected to Tensile, Shear, or Combined Tensile/Shear Loads” (“Chao”) in view of “Large Cold Plastic deformation of metal-matrix composites reinforced by SiC particles” (“Jiang”).

11. Chao discloses a fracture prediction device for use with a spot welded portion. However, Chao does not disclose a fracture limit line.

12. Jiang does disclose this (see page 1519).

13. Chao and Jiang are analogous art as they are both related to the field of stress fractures in materials.

14. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the fracture limit line of Jiang with the fracture prediction device of Chao, motivated by the desire to "to study the workability of ductile materials by examining the free-surface strain histories until fracture occurred (see Jiang, page 1519).

15. Regarding claim 10, Chao and Jiang teach:

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A fracture prediction device provided for a spot welded portion (*Chao: Introduction, "predict the failure strength of a spot weld"*), comprising:

an input arrangement configured to input **at least one of** a material strength, a plate thickness, a nugget diameter of a spot welding, a plate width of a particular joint, or a rotation angle (*Chao: Table 1, "Thickness of the sheet", "Nominal Nugget Diameter"*) of the joint plates in a tension testing procedure which is at least one of a cross tension testing procedure or a shear tension testing procedure at a spot welded joint (*Chao: Abstract, "lap-shear and cross tension test samples"*);

a first calculation arrangement configured to determine a fracture strength parameter in **at least one** of a cross tension or a shear tension based (*Chao: Abstract, "lap-shear and cross tension test samples"*) on a fracture strength curve of the spot welded portion (*Chao: Introduction, "curve fitted to a force based criterion for design consideration"; Figure 1*) obtained from **at least one** of the material strength, the plate thickness, the nugget diameter of the spot welding, the plate width of the joint, or the rotation angle of the particular joint in the tension testing procedure (*Chao: Table 1, "Thickness of the sheet", "Nominal Nugget Diameter"*);

a parameter storage arrangement configured to store the fracture strength parameter by each steel type (*Chao: Section 7, "from plain carbon steel to HSLA and the test sample geometries include cross tension, lap-shear, coach peel as well as in-plane torsion"*); and

a second calculation arrangement configured to analyze a fracture of the spot welded portion by providing the fracture strength parameter stored in the parameter storage arrangement (*Chao: Abstract, "Data from strength tests as well as finite element numerical method are used to validate the model. Finally, the utility of the model in accessing the failure strength of spot welds is discussed"*) into a fracture limit line (*Jiang: page 1519, "a linear fracture limit line could be drawn in an  $\epsilon_\theta$ - $\epsilon_z$  plane (where  $\epsilon_\theta$  is the circumferential strain and  $\epsilon_z$  is the local axial strain) by linking the fracture points measured on the cylindrical surfaces of specimens, this line being approximately parallel to the line  $\epsilon_\theta$ - $\epsilon_z/2$ , which represents the strain path for homogeneous compression"*) in which a deformation at a periphery of the spot welding portion is modeled by a finite element procedure (*Chao: Table 2, "finite element analysis"*).

16. Claims 9 and 11-16 are rejected for almost identical reasoning as above.

- While only certain citations have been given, Applicant should consider the reference in its entirety.

#### *Additional References Cited*

17. US 7,505,885: A finite element method for predicting crack opening and propagation entails defining a succession of overlapping interface elements at a potential crack plane, each element having a bound node pair and side node pairs spaced from the bound node pair to sense approach of a crack. An energy-based fracture mechanics criterion determines whether release

occurs at the bound nodes and, if so, the displacement between the bound nodes is calculated based on a strain softening law. The process is repeated for each element in sequence.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NITHYA JANAKIRAMAN whose telephone number is (571)270-1003. The examiner can normally be reached on Monday-Thursday, 8:00am-5:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on (571)272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nithya Janakiraman/  
Examiner, Art Unit 2123

/Paul L Rodriguez/  
Supervisory Patent Examiner,  
Art Unit 2123